

REMARKS

Applicant would like to thank Examiner Saucier for the courtesy of the phone interview with Applicants' representative, Ping Wang, on January 26, 2010. The claims have been amended to reflect issues discussed during the interview.

Upon entry of the foregoing amendment, Claims 1, 3-12 and 14-23 are pending in the application. Claims 1, 3-12 and 14-21 are under consideration. Claims 1 and 14 have been amended. Claims 2 and 13 have been canceled. Support for the amended Claim 1 can be found in the originally filed Claim 2 and paragraphs [0011] and [0012] of the published Application. Support for the amended Claim 14 can be found in the originally filed Claim 13 and paragraph [0019] of the published Application. These changes do not introduce new matter, and their entry is respectfully requested.

In the Office Action dated November 10, 2009, the Examiner set forth a number of grounds for rejection. These grounds are addressed individually and in detail below.

Claim Rejection Under 35 U.S.C. § 112, Second Paragraph

The Examiner states that Claim 13 is indefinite for reciting the variable M. Applicants respectively traverse the rejection. In response to the Examiner's concerns, Claim 13 has been canceled. The rejection is now moot.

Claims Rejections Under 35 U.S.C. § 103(a)

Claims 1-19 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Onken et al. (hereinafter "Onken") in view of Sundari et al. (hereinafter "Sundari") or the ATCC Catalog and Taubert et al. (hereinafter "Taubert") for the reasons set forth on pages 4-6 of the Office Action. Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Onken in view of Sundari or the ATCC Catalog and Taubert as applied to Claims 1-19 and 21 above, and further in view of Kaspera et al. (hereinafter "Kaspera") for reasons set forth on page 6. Applicants respectfully traverse the rejections.

To establish a *prima facie* case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Koyka*, 490 F. 2d 981, 180 USPQ 580 (CCPA, 1974).

Further, the key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval).

In this case, the amended independent Claim 1 is directed to a method for producing oxidized flavor-active terpenes from terpene hydrocarbons by means of a selective biotransformation using microorganisms of the *ascomycetes*, *basidiomycetes* and *deuteromycetes* classes, comprising: (a) perforating mycelium by lyphophilization measures and permeating mycelium by ultrasonic treatment and/or extrusion, wherein the permeating step may be

performed before or after the perforating step, (b) rehydrating the perforated and permeated mycelium, (c) mixing the rehydrated mycelium from step (b) with the substrate, and (d) recovering the oxidized flavor-active terpene.

Onken generally describes the production of the terpene carvone from the terpene hydrocarbon limonene via biotransformation with the basidiomycete, *Pleurotus sapidus*. The biotransformation method used in Onken is fundamentally different from the claimed method. Specifically, Onken simply added limonene to a culture of basidiomycete *Pleurotus sapidus* to incubate for 4 days, and therefore, the substrate in is the live cells (See p 166). Onken does not teach or suggest the steps of perforating mycelium by lyophilization and permeating mycelium by ultrasonic treatment and/or extrusion and rehydrating the perforated and permeated mycelium, as recited in Claim 1.

The Examiner noted that the culture in Onken has been homogenized with an ultraturrax homogenizer. Applicants respectfully submit that the homogenization process described in Onken is used to break the mycelium after biotransformation for GC analysis of terpenes. Onken does not teach or suggest homogenizing the mycelium prior to biotransformation. In fact, since Onken uses the live culture of basidiomycete for the biotransformation, it teaches away from homogenize mycelium prior to biotransformation.

The Examiner states that Sundari and ATCC teach lyophilization of mycelium of basidiomycete fungi. Applicants respectfully submit that Sundari and ATCC do not teach or suggest **perforating** mycelium by lyophilization as recited in Claim 1. Specifically, as agreed by the Examiner during the interview that both Sundari and ATCC describe how to preserve viability of mycelium of basidiomycete fungi by lyophilization. In the present Claims, however, lyophilization is used to perforating mycelium so that cellular enzymes may be released from the mycelium, which would necessarily reduce the viability of the lyophilized mycelium. Therefore,

a person of ordinary skill in the art would not use the lyophilization methods described in Sundari and ATCC for the purpose of perforating mycelium. Furthermore, Sundari and ATCC also fail to teach or suggest permeating mycelium by ultrasonic treatment and/or extrusion and rehydrating the perforated and permeated mycelium, as recited in Claim 1.

Taubert generally describes different methods for releasing active enzymes from filamentous fungi without enzyme degradation and any loss of enzyme activity. Kaspera was cited for its teachings on biotransformation of (R)-limonene to cis-(+)-carveol. Taubert and Kaspera also fail to teach or suggest the steps of perforating mycelium by lyophilization, permeating mycelium by ultrasonic treatment and/or extrusion and rehydrating the perforated and permeated mycelium, as recited in Claim 1.

Accordingly, Claim 1 is patentable over Onken, Sundari, ATCC Catalog, Taubert and Kaspera, because the cited references, individually or in combination, fail to teach or suggest all of the claim limitations.

Claims 3-12 and 14-21 are also patentable because they depend from Claim 1, and recite additional patentable subject matter.

In view of the foregoing, Applicants respectfully submit these grounds of rejection have been obviated and withdrawal of the rejection under 35 U.S.C. §103 is respectfully requested.

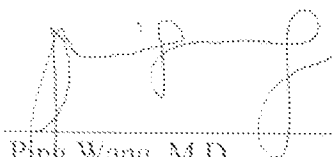
CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of the application, the Examiner is invited to contact Applicants' counsel, Ping Wang, M.D. (Reg. No. 48,328), at 202.842.0217.

Respectfully submitted,

MORRIS, MANNING & MARTIN, LLP



Ping Wang, M.D.
Registration No. 48,328

1333 H Street, N.W.
Suite 820
Washington, D.C. 20005
Telephone No. 202.842.0217
Facsimile No. 202.408.5146